DOCUMENT RESUME

ED 167 796 CE 020 253

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TITLE Vocational Education R&D Products: Impact, Reliability, and Validity.
INSTITUTION Ohio State Univ., Columbus. National Center for Research in Vocational Education.
PUB DATE 79
NOTE 36p.

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Administrator Attitudes; Item Analysis; *Program Development; *Questionnaires; Reliability; *Research; *Research Methodology; Secondary Education; Student Opinion; Teacher Attitudes; *Test Construction; Validity; Vocational Directors; *Vocational Education; Vocational Education Teachers

ABSTRACT

A pilot study was initiated to achieve reliability and especially validity indexes for measuring research and development impact. Two opposing questionnaires were administered to each of three target groups: 164 high school vocational education students, 120 secondary school vocational education teachers, and 56 vocational education administrators. Half of each group received the original questionnaire measuring product impact; half received the alternative questionnaire measuring product nonimpact. Three impact questionnaires, developed primarily by vocational education administrators, were constructed through item analysis. Nonimpact questionnaires stated the impact questions negatively. The student questionnaire contained 16 items, the teacher questionnaire 36 items, and the administrator questionnaire 20 items. The following are original and alternative questionnaire discriminant validity correlations and reliability correlations for the three groups: students: -.049 validity, .83 reliability; teachers: -.18 validity, .78 reliability; and administrators: -.45 validity, .86 reliability. Better impact assessment was found in the administrator domain than in the student and teacher domains. Each adjusted questionnaire contains ten acceptably valid items. An example of sensitive/valid items from each domain is (1) students--gaining new knowledge from the product, (2) teachers--the completeness of details covered in the product, and (3) administrators--the absence of many better alternative products in the subject area. (CSS)

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VOCATIONAL EDUCATION R&D PRODUCTS: IMPACT, RELIABILITY, AND VALIDITY

Lynn J. Harris[1]

Although the Committee on Vocational Education Research and Development (1976) has pointed out a lack of documented R&D impact, it is essential that if such documentation is obtained, the assessment tool should demonstrate some degree of reliability and validity, the latter being more important. Even the studies cited by COVERD as being acceptable examples of documented impact show no evidence of reliability or validity within their methods of assessment. Instead, such studies (Allen, 1968; Hjelm and Boerrigter, 1974; Roney, 1971; Sutherland Associates, 1974; and Southwide Research Coordinating Council, 1975) gave rather abstract, nonempirical accounts of perceived impact; furthermore, all studies seemed to be directed toward R&D projects and processes that are set apart from the issue of R&D products. One exception, however, is Crawford (1972), who specifically studied the impact of R&D products. But his research was not limited to vocational education; nor did it have any consistent reliability or validity of impact measurement on an overall basis. The Crawford study resembled the research cited in the COVERD report by listing characteristics of products perceived to be exemplars of positive

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impact. An apparent advantage of the Crawford study is that selected products were systematically grouped to describe different types of existing positive impact.

It seems reasonable to expect that the introduction of a product into a vocational education setting would result in a favorable state of affairs, but Dick (1976) points out that negative impact could occur also. For the sake of the present study, impact is operationally defined as a measurable change resulting from the introduction of a product into a vocational education setting. This differs sharply from other definitions of impact, such as Miller and Miller's (1974) "maintenance and extension" viewpoint.

The main objective of this pilot study is to achieve some index of measuring impact with evidence of reliability and validity, the latter being the most important at this early stage of the research effort. The validity of measurement, in the case of a fairly new concept such as impact, can be very troublesome, but reliability is not extremely difficult to attain. In the present study, the author has chosen to approach this problem by establishing coefficients of discriminant validity demonstrated by Selltiz, Wrightsman, and Cook (1976). That is to say, since there is so little known about the impact of these R&D products, the research must be started from a very basic standpoint.

Purpose

This pilot study produced valid instrumentation which can be used to assess the impact of R&D products in general, with

respect to students, teachers, and administrators. The rationale for achieving this task was characterized by the notion of discriminant validity (Selltiz, Wrightsman, and Cook, 1976). In other words, it was necessary to measure impact by two opposing questionnaires administered to each of three target groups (students, teachers, and administrators). One (original) questionnaire was constructed to measure impact of products. Another (alternative) quesionnaire was constructed to measure nonimpact of products. It was assumed that if there was little or no correlation, or a negative correlation, between the original and alternative questionnaires, this would indicate that the original questionnaire was indeed getting at attitudes specifically directed toward impact.

Method

Subjects

Students: One hundred sixty-four vocational education students enrolled in three public schools were asked to express their opinions of the particular R&D product they were using (a standard set of core curriculum materials for each student's course of study). All respondents were middle income high school students from five geographical locations, including Water Valley and Oxford, Mississippi; and Stillwater, Tulsa, and Oklahoma City, Oklahoma. The students were enrolled in several different courses of study, e.g., home economics, food service, auto mechanics, vocational agriculture, small engine repair, electronics, etc. Each student possessed his/her own set of core study materials which had been issued at the beginning of the current school year.

Teachers: One hundred twenty vocational education teachers were also asked to express their opinions of the particular R&D product they were using (a standard set of core curriculum materials for each teacher's respective course of instruction). Each teacher was employed in a public school system located in the same geographical areas as the students listed above, and each teacher taught at least one of the courses in which the vocational education students were enrolled (listed above).

Administrators: Fifty-six administrators from the states of Oklahoma, Mississippi, and Georgia were also asked to express their opinions of the specific R&D product they were using. The products consisted of vocational education core curriculum materials and a set of procedures for evaluating vocational education programs within secondary school systems. Administrators were state employees, with the exception of a few who provided administrative services at the local level.

Instrumentation

Three impact questionnaires were constructed as a result of an item analysis conducted at the National Center for Research in Vocational Education, located at The Ohio State University. A panel of six experts from various geographical locations was assembled to rate each item in three separate item pools: an item pool for students, an item pool for teachers, and an item pool for administrators. Items were generated by National Center researchers, vocational education teachers, and vocational education students on the basis of their experience. Part of the

item pool was also obtained from a study by McCaslin (1973).

An arbitrary cutoff point was established for each item pool in order to retain or discard items. Consequently, three questionnaires were constructed based upon items which had a mean rating above the established cutoff points. Inter-rater reliabiity coefficients were then computed for each questionnaire. The inter-rater reliability coefficients for each questionnaire yielded .21 for students, .02 for teachers and .61 for administrators. The reason for such a low amount of agreement on the student and teacher questionnaires, perhaps, was that all six of the selected experts were vocational education administrators, who agreed more when they rated items dealing with administrative impact than with either student or teacher impact.

After the undesirable items were discarded, the student questionnaire contained 16 items, the teacher questionnaire contained 36 items, and the administrator questionnaire contained 20 items. All questionnaires were formed into Likert scales. Discriminant validity was obtained by constructing an alternative, negative questionnaire for each of the three target groups (students, teachers, and administrators). The alternative questionnaires were identical to the original ones, except that each question was stated negatively. Subsequently, the number of items per questionnaire was to be reduced further by field testing each item for sensitivity and discriminant validity during the pilot study.

Procedure

Students: Half of the students (82) were asked to respond to the original Student Impact Questionnaire, which contained sixteen scales (Table 1). The remaining half of the students (82) were asked to respond to the alternative Student Impact Questionniare, which contained sixteen identical but negatively stated scales. Examples of items from original and alternative questionnaires are listed below:

(Original)

I gained new knowledge from this product.

SD D DK A SA

(Alternative)

I gained no new knowledge from this product.

SD D DK A SA

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insert Table 1 about here

All students were administered questionnaires by classroom teachers. An equal amount of original and alternative questionnaires was administered per each geographical location and collected on site.

Teachers: The same procedure (stated above) was used; half of the teachers (60) were asked to respond to the original Teacher Impact Questionnaire (Table 2), and the remaining half of the teachers (60) were requested to respond to the alternative Teacher Impact Questionnaire. The alternative Teacher Impact Questionnaire contained 36 items identical to its original counterpart, except that

the items were stated negatively. The procedure for teacher data collection differed from student data collection in that

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insert Table 2 about here

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both original and alternative Teacher Impact Questionnaires were sent and returned by mail. Sixty-two percent of these teacher questionnaires were returned.

Administrators: The procedure was repeated, and half of the administrators (28) received the original Administrator Impact Questionnaire (Table 3), while the rest of the administrators (28) responded to the alternative Administrator Impact Questionnaire. All questionnaires for administrators as well as teachers

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insert Table 3 about here

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were sent and returned by mail. Ninety-three percent of the Administrator Impact Questionnaires were completed and returned.

Results

The basic objective for the previously stated methodology was to obtain a low or negative correlation coefficient between original and alternative questionnaires for each target group.

For students, the original and alternative questionnaires yielded a -.049 discriminant validity correlation, and an .83 coefficient of reliability (test-retest). For teachers, a -.10 discriminant validity correlation between original and alternative questionnaires was obtained and a .78 reliability (test-retest) correlation was found for the original version of the questionnaire. Original and alternative questionnaires within the administrator group yielded a -.45 discriminant validity correlation with a .86 (test-retest) reliability coefficient for the original questionnaire (see Table 4).

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insert Table 4 about here

Further adjustments were made with each set of questionnaires to increase coefficients of discriminant validity between original and alternative forms. A chi-square analysis and a Pearson Product-Moment correlation were performed to compare each orginal item in the student, teacher, and administrator questionnaires with its alternative counterpart. The main intention behind these computations was to retain only certain items which yielded a significant chi-square value when comparing impact vs. nonimpact and which also demonstrated a negative correlation between original and alternative statements.

A description of the chi-square comparisons is shown in Table 5. Table 5 also points out the necessity to collapse the scale points of the questonnaires from five to three due to the occurrences of small frequencies.

Insert Table 5 about here

Ideally, each item should also exhibit low or negative correlation between the original item and its alternative facsimile (Tables 6, 7, and 8). If both of these requirements were not met by any item, the item was discarded. The chi-square analysis was performed simply to determine if respondents reacted positively to each original item and negatively to each alternative item. If this did not occur, either the item was difficult to understand or the respondents were ambivalent about the question.

It is evident from Tables, 6, 7, and 8 that many respondents answered quite positively on each original item and very negatively on each alternative item. However, when alternative and original scores were correlated for each item, only ten in each questionnaire yielded both a low or negative correlation coefficient, and a significant chi-square value (shown in Tables 6, 7, and 8). The reason for determining the correlation between original and alternative scores on each item was to check for consistency of responses.

Insert Table 6 about here

Insert Table 7 about here

Insert Table 8 about here

Adjusted coefficients of test-retest reliability and discriminant validity for each questionnaire are shown in Table 9. The adjustments refer to a reduction of the larger number of items in each questionnaire to the ten which resulted in a significant chi-square and a low or negative correlation. The reductions represent final questionnaire versions.

Insert Table 9 about here

Discussion

The rather low degree of inter-rater reliability on the student and teacher original questionnaires suggests that when a panel of experts is selected, their experience should directly coincide with the nature of the questionnaire they are ultimately going to construct. This is indicated by a fairly high degree of inter-rater reliability on the administrator questionnaire. The panel of experts were all high level vocational education administrators, as previously mentioned. Time and budget constraints did not permit additional representatives of students and teachers to be formed into panels of experts.

The superiority of the administrator impact questionnaire over its teacher and student counterparts is evident not only in inter-rater reliability, but also in test-retest reliability

and discriminant validity. In other words, it seems as though there is a better assessment of impact in the affective/value domain than in student and teacher domains, at least within the present study. The teacher impact questionnaire turned out to be marked because of the items in terms of validity, but very low in inter-rater reliability, indicating that the panel of experts did not really have a consistent conceptualization of impact as a matter of fact, the teacher questionnaire produced the lowest amount of agreement on items concerning impact. The student impact questionnaire yielded the lowest coefficient of discriminant validity, but did correlate negatively with the alternative counterpart, as it was intended to do.

The most sensitive and valid items for students turned out to be the following (See Table 6):

1. gaining new knowledge from the product
2. understanding the product as it is presented
3. interesting language usage in the product
4. understanding the intent of the product
5. interest evoked by the product
6. available assistance in understanding the product
7. the value of the material presented in the product
8. the novelty of the size of the product
9. the suitability of the product to the individual student
10. the opportunity to exchange ideas about the product

Teachers indicated the most sensitive and valid responses concerning the following (see Table 7):

1. the completeness of details covered in the product
2. satisfactory guidelines provided for use of the product
3. staff requirements decreased as a result of the product
4. feasibility of the product
5. clearly stated objectives
6. adequacy of space facilities for using the product
7. ample reference and library resources to support the product
8. students asking to use the product
9. conformity of the product to routines commonly found in a real work situation
10. reduction in time required to teach a skill

Among the sample of administrators, responses on the following items were highest in sensitivity and validity (shown in Table 8):

1. the absence of many better alternative products in the subject area
2. cost effectiveness of the product
3. no extra staff needed for implementation
4. adequacy of available data regarding the proper use of the product
5. ease of dissemination of the product
6. reduction in staff requirements as a result of the product
7. freedom to modify the product
8. high teacher motivation toward the use of the product
9. endorsement of the product by the local vocational advisory committee
10. timeliness of the product

Generally, the outcomes concerning each questionnaire were favorable; it seems reasonably safe to assume that all three of them are acceptable in terms of validity. The adjusted questionnaires will be the best measures that the researchers can take into the field. Although the number of items (10) in each of the adjusted questionnaires appears to be small, it is a rather accessible number in that the questionnaires can be completed in a very small amount of time. These measures will contain the most sensitive and meaningful items according to the selected sample of students, teachers, and administrators from the field of vocational education.

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PRODUCT IMPACT QUESTIONNAIRE FOR STUDENTS

Name of Product _____

Directions:

Everyone has his or her own opinion about this product. Some opinions are good, some are bad, and others are not concerned. There are always different reasons for whatever opinions an individual may have about this product. Express your opinion of the product by circling one symbol on the scale for each of the following items. The symbols for the scale are explained below:

SD	=	Strongly disagree
D	=	Disagree
DK	=	Don't know
A	=	Agree
SA	=	Strongly agree

EXAMPLE:

I should get an immediate raise in pay.

SD D DK A (SA)

All answers are confidential. DO NOT SIGN YOUR NAME TO THIS QUESTIONNAIRE.

* *

1. I gained new knowledge from this product.

   SD D DK A SA

2. I understand the product as it is presented.

   SD D DK A SA

3. The language in this product is "alive"; it keeps my interest.

   SD D DK A SA

4. I understand what this product is designed to do.

   SD D DK A SA

5. This product is interesting.

   SD D DK A SA

6. This product will help me reach my vocational goals.

   SD D DK A SA

*Original Form

7. If needed, assistance is available to help me understand this product.

SD D DK A SA

8. I am stimulated to think about the topics presented in this product.

SD D DK A SA

9. The material presented in this product seems valuable to me.

SD D DK A SA

10. The aims of this product are realistic.

SD D DK A SA

11. I really feel that this product was made for people like me.

SD D DK A SA

12. I usually have an opportunity to exchange ideas with others about this product.

SD D DK A SA

13. This product will help me get a job of my choice.

SD D DK A SA

14. This product contains ideas which I can use on the job.

SD D DK A SA

15. I enjoy using this product.

SD D DK A SA

16. This product has caused me to think of new ways to do my job.

SD D DK A SA

Table 2

PRODUCT IMPACT QUESTIONNAIRE FOR TEACHERS

Name of Product _____

Directions:

Everyone has his or her own opinion about this product. Some opinions are good, some are bad, and others are not concerned. There are always different reasons for whatever opinion an individual may have about this product. Express your opinion of the product by circling one symbol on the scale for each of the following items. The symbols for the scale are explained below:

SD	=	Strongly disagree
D	=	Disagree
DK	=	Don't know
A	=	Agree
SA	=	Strongly agree

EXAMPLE:

I should get an immediate raise in pay.

SD D DK A (SA)

All answers are confidential. DO NOT SIGN YOUR NAME TO THIS QUESTIONNAIRE.

* *

1. The information in this product contains many examples which help explain the subject matter.

   SD D SK A SA

2. All of the details of the subject matter are covered in this product.

   SD D DK A SA

3. This product is written in language similar to the language used in the world of work.

   SD D SK A SA

4. The events which occur in this product are events which would occur in the real world.

   SD D DK A SA

*Original Form

Table 2 (Continued)

5. The developers of this product provided special teacher training.

   SD D DK A SA

6. This product has satisfactory procedures and guidelines for use.

   SD D DK A SA

7. Objectives were clearly and sufficiently pointed out for students using this product.

   SD D DK A SA

8. This product possesses good overall quality (sound, accurate, socially fair, up-to-date).

   SD D DK A SA

9. Staff requirements decreased as a result of this product.

   SD D DK A SA

10. What percentage of this product's original objectives are being accomplised for the intended group?

    5 10 25 50 60 75 100

11. The users of this product were allowed to modify it.

    SD D DK A SA

12. This product harbors creativity and forward thinking.

    SD D DK A SA

13. This product is relevant to the needs of the students involved.

    SD D DK A SA

14. This is a feasible product.

    SD D DK A SA

15. There are suggestions for parent-community involvement stated in this product.

    SD D DK A SA

16. This product has clearly stated objectives.

    SD D DK A SA

Table 2 (Continued)

17. This product contributes to the improvement of learning.

SD D DK A SA

18. This product contributes to the improvement of classroom climate or operation.

SD D DK A SA

19. This product is effective.

SD D DK A SA

20. There is sufficient data available regarding student impact of this product.

SD D DK A SA

21. This product contributes to the improvement of perceptual-motor skills.

SD D DK A SA

22. There are measured cognitive gains for students who use this product.

SD D DK A SA

23. There is no adverse student reaction to this product.

SD D DK A SA

24. There are adequate space facilities for effectively using this product.

SD D DK A SA

25. There are ample reference and library resources to support this product.

SD D DK A SA

26. There is favorable student reaction to this product.

SD D DK A SA

27. Students ask to use this product.

SD D DK A SA

28. The product conforms to the routines commonly found in a real work situation.

SD D DK A SA

29. The product teaches students to become more flexible.

SD D DK A SA

30. The product prepares students for job level entry.

SD D DK A SA

31. The product relates to different levels of student abilities.

SD D DK A SA

32. The product provides immediate feedback to students concerning their success or failure.

SD D DK A SA

33. The product helps students work together on a common task.

SD D DK A SA

34. Students say they like the product.

SD D DK A SA

35. The product reduces the amount of time it takes to teach this skill.

SD D DK A SA

36. This product is better than similar products I have used in the past.

SD D DK A SA

37. How long has it been since you first started to use this product?

___less than 6 months ___1 year ___2 years ___3 years
___longer than 3 years.

38. Total number of years of teaching experience:

___less than 1 year, ___1-5 years, ___6-10 years, ___more than 10 years.

39. Do you have confidence in the person(s) who developed this product?

___yes ___no ____don't know

40. My environment is: (please check one)

___Urban (central city of 50,000 inhabitants or more)
___Suburban (bordering a central city)
___Rural (at least 25 miles from a central city or a population of 5,000 inhabitants or less).

Table 3

PRODUCT IMPACT QUESTIONNAIRE FOR ADMINISTRATORS

Name of Product_____

Directions:

Everyone has his or her own opinion about this product. Some opinions are good, some are bad, and others are not concerned. There are always different reasons for whatever opinion an individual may have about this product. Express your opinion of the product by circling one symbol on the scale for each of the following items. The symbols for the are explained below:

SD	=	Strongly disagree
D	=	Disagree
DK	=	Don't know
A	=	Agree
SA	=	Strongly agree

EXAMPLE:

I should get an immediate raise in pay.

SD D DK A (SA)

All answers are confidential. DO NOT SIGN YOUR NAME TO THIS QUESTIONNAIRE.

. . . . . .

1. This product contributes to the improvement of school organizational efficiency.

   SD D DK A SA

2. There is NO excessive need for special facilities and equipment to implement this product.

   SD D DK A SA

3. This product can be transported to other locations.

   SD D DK A SA

4. There are not many better alternative products available in this area.

   SD D DK A SA

Original Form

Table 3 (Continued)

5. This product is cost effective.

SD D DK A SA

6. There is adequate data available regarding the dissemination of this product.

SD D DK A SA

7. The implementation of this product does not require extra staff.

SD D DK A SA

8. Increased administrative support is not needed for successful adoption of this product.

SD D DK A SA

9. There is adequate data available regarding the proper use of this product.

SD D DK A SA

10. This product will be used as much or more next year.

SD D DK A SA

11. Dissemination of this product is not difficult in our work environment.

SD D DK A SA

12. Staff requirements are decreasing as a result of this product's use.

SD D DK A SA

13. This product is being used in large numbers.

SD D DK A SA

14. There is adequate data available regarding this product's impact on its target audience.

SD D DK A SA

15. What percentage of this product's original objectives are being accomplished?

5 10 25 50 60 75 100

16. The users of this product are allowed to modify it.

SD D DK A SA

17. Teachers say they like the product.

SD D DK A SA

18. Teachers are excited about using the product.

SD D DK A SA

19. The product is receiving the endorsement of the local vocational advisory committee.

SD D DK A SA

20. The product is timely.

SD D DK A SA

21. How long has it been since you first started to use this product?

___less than 6 months ___1 year ____2 years

___3 years _____longer than 3 years

22. Total number of years of experience:

___less than 1 year; ___1-5 years; ___6-10 years;

___more than 10 years.

23. Do you have confidence in the person(s) who developed this product?

_____yes ____no _____don't know

24. My environment is: (please check one)

___Urban (central city of 50,000 inhabitants or more)

___Suburban (bordering a central city)

___Rural (at least 25 miles from a central city or a population of 5,000 inhabitants or less).

Table 6

Test-Retest Reliability and Discriminant

Validity Coefficients

For Impact Questionnaires Before Adjustments

Type of Questionnaire	# of Items	Test-retest Reliability	Discriminant Validity
Student	16	.81	=.009 (n=164)
Teacher	36	.76	= .10 (n=120)
Administrator	20	.82	= .05 (n=56)

Tabla 5

Ejemplo de tabulación bidimensional
donde debemos unir filas no libres por
chi-cuadrado analítico

Unimos filas según puntos:

	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
original	0	0	0	0	0
alternativa	0	7	13	7	3

Unimos puntos colapsando filas libres no libres dos no cabrá frecuencias:

	[illegible]	[illegible]	[illegible]
original	13	0	0
alternativa	7	13	0

Table 6

Correlation and Chi-Square Values between the Original and Alternative Student Impact Questionnaires[1]

	Item	Correlation (df=80)	Chi-Square (df=2)
*	1. I gained new knowledge from this product.	-.01	106.01
*	2. I understand the product as it is presented.	-.19	54.82
*	3. The language in this product is "alive"; it keeps my interest.	-.11	39.24
*	4. I understand what this product is designed to do.	-.10	123.56
*	5. This product is interesting.	-.01	117.70
	6. This product will help me reach my vocational goals.	.23	110.97
*	7. If needed, assistance is available to help me understand this product.	-.05	105.29
	8. I am stimulated to think about the topics presented in this product.	.02	58.60
*	9. The material presented in this product seems valuable to me.	-.02	101.54

Table 6 (Continued)

*	10. The aims of this product are realistic.	-.38	114.50
*	11. I really feel that this product was made for people like me.	-.02	76.38
*	12. I usually have an opportunity to exchange ideas with others about this product.	-.02	45.40
	13. This product will help me get a job of my choice.	.06	59.87
	14. This product contains ideas which I can use on the job.	.02	115.56
	15. I enjoy using this product.	.03	69.00
	16. This product has caused me to think of new ways to do my job.	.10	64.66

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[1] All reported chi-square values are statistically significant beyond the .001 level.

*This item was retained for the final version of the Student Impact Questionnaire.

Table 7

Correlation and Chi Square Values between the Original and Alternative Teacher Impact Questionnaires

	Item	Correlation(df=58)	Chi-Square(df=2)
1.	The information in this product contains many examples which help explain the subject matter.	.17	89.96***
+ 2.	All of the details of the subject matter are covered in this product.	-.02	44.90***
3.	This product is written in language similar to the language used in the world of work.	.26	110.36***
4.	The events which occur in this product are events which would occur in the real world.	.14	111.26***
5.	The developers of this product provided special teacher training.	.23	68.68***
+ 6.	This product has satisfactory procedures and guidelines for use.	-.05	112.12***
7.	Objectives were clearly and sufficiently pointed out for students using this product.	.08	111.26***
8.	This product possesses good overall quality (sound, accurate, socially fair, up-to-date).	.07	109.28***

Table 7 (Continued)

+ 9.	Staff requirements decreased as a result of this product.	-.13	7.75*
10.	What percentage of this product's original objectives are being accomplished for the intended group?	.15	67.61***
11.	The users of this product were allowed to modify it.	.09	98.36***
12.	This product harbors creativity and forward thinking.	.08	83.40***
13.	This product is relevant to the needs of the students involved.	.01	113.39***
+ 14.	This is a feasible product.	-.14	120.00***
15.	There are suggestions for parent- community involvement states in this product.	.20	70.15***
+ 16.	This product has clearly stated objectives.	-.18	120.00***
17.	This product contributes to the improvement of learning.	.05	120.00***
18.	This product contributes to the improvement of classroom climate or operation.	.09	105.10***

Table 7 (Continued)

	19.	This product is effective.	.08	109.60***
	20.	There is sufficient data available regarding student impact of this product.	.02	20.96***
	21.	This product contributes to the improvement of perceptual motor skills.	.10	67.32***
	22.	There are measured cognitive gains for students who use this product.	.08	91.09***
	23.	There is adverse student reaction to this product	.05	14.94***
+	24.	There are adequate space facilities for effectively using this product.	-.13	85.40***
+	25.	There are ample reference and library resources to support this product.	-.02	47.59***
	26.	There is favorable student reaction to this product.	.09	82.90***
+	27.	Students ask to use this product.	-.01	15.17***
+	28.	The product conforms to the routines commonly found in a real work situation.	-.16	106.80***

Table 7 (Continued)

29.	The product teaches students to become more flexible.	.12	76.72***
30.	The product prepares students for job level entry.	.03	63.80***
31.	The product relates to different levels of student abilities.	.26	54.10***
32.	The product provides immediate feedback to students concerning their success or failure.	.15	78.80***
33.	The product helps students work together on a common task.	.16	87.00***
34.	Students say they like the product.	.11	52.66***
+ 35.	The product reduces the amount of time it takes to teach this skill.	-.11	24.94***
36.	This product is better than similar products I have used in the past.	.12	61.16***

*** Significant beyond the .001 level

* Significant beyond the .05 level

+ This item was retained for the final version of the Teacher Impact Questionnaire

Table 8

Correlation and Chi Square Values between the Original and Alternative Administrator Questionnaires

	Item	Correlation(df=26)	Chi-Square(df=2)
1.	This product contributes to the improvement of school organizational efficiency.	.28	24.58***
2.	There is no excessive need for special facilities and equipment to implement this product.	.23	44.70***
3.	This product can be transported to other locations.	.12	46.68***
+ 4.	There are not many better alternative products available in this area.	-.08	30.80***
+ 5.	This product is cost effective.	.02	34.84***
6.	There is adequate data availabe regarding the dissemination of this product.	.08	22.64***
+ 7.	The implementation of this product does not require extra staff.	-.01	20.98***
8.	Increased administrative support is not needed for successful adoption of this product.	.15	.50

Table 8 (Continued)

+ 9.	There is adequate data available regarding the proper use of this product.	-.02	31.70***
10.	This product will be used as much or more next year.	.21	43.23***
+ 11.	Dissemination of this product is not difficult in our work environment.	-.19	43.20***
+ 12.	Staff requirements are decreasing as a result of this product's use.	-.37	20.26***
13.	This product is being used in large numbers.	.05	25.44***
14.	There is adequate data available regarding this product's impact on its target audience.	-.13	1.60
15.	What percentage of this product's original objectives are being accomplished?	.07	38.86***
+ 16.	The users of this product are allowed to modify it.	-.03	29.66***
17.	Teachers say they like the product.	.16	33.94***

Table 8 (Continued)

+ 18.	Teachers are excited about using the product.	-.05	21.32***
+ 19.	The product is receiving the endorsement of the local vocational advisory committee.	-.15	43.28***
+ 20.	The product is timely.	-.37*	52.14***

*** Significant beyond the .001 level

+ This item was retained for the final version of the Administrator Impact Questionnaire

Table 9

Test-retest Reliability and Discriminant Validity Coefficients for Adjusted Impact Questionnaires

Type of Questionnaire	N of Items	Test-retest Reliability	Discriminant Validity
Student	10	.79	-.11 (n=164)
Teacher	10	.71	-.24 (n=120)
Administrator	10	.80	-.57 (n=56)